Title: LINEAR FIXTURE SUSPENSION SYSTEM Inventors: Yaphe, Howard, et al.

Atty. Dkt. No. ZL369-02009

WHAT IS CLAIMED IS:

1. A suspension system for suspending adjacent end portions of first and second

linear fixtures extending generally along a longitudinal axis from an overhead structure,

comprising:

joiner supports mounted to each of the adjacent end portions of the first and second linear

fixtures, the joiner support having adjacent first alignment receiving slots extending inwardly

from the end portions, and at least one pair of adjacent clamping surfaces accessible from each of

the end portions;

a hanger member suspended by a wire from the overhead structure for supporting the first

and second linear fixtures from the overhead structure, the hanger member comprising:

a bridge member connected to said wire;

an elongated alignment member supported by the bridge member and having a pair of

opposing tongue insert portions, each of the tongue insert portions extending along a

corresponding one of the adjacent alignment receiving slots of the joiner supports to loosely

juxtaposition the end portions of the first and second linear fixtures with the hanger member;

at least one clamping member supported from the bridge member for relative vertical

movement therewith, and the clamping member having two spaced apart wings each adapted to

be inserted loosely adjacent a corresponding one of the pair of adjacent clamping surfaces when

the tongue insert portions are inserted into the alignment receiving slots and the clamping

member being moved vertically to bring the wing members into clamping engagement with the

clamping surfaces and move the end portions of the linear fixtures towards each other into

locking engagement.

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2. The suspension system of claim 1 wherein the elongate alignment member

extends transversely across the bridge member and has an opening therein through which the

wire passes, and the elongate alignment member is positioned to bisect the bridge member, and

the joiner supports further comprising two pairs of adjacent clamping surfaces and two clamping

members supported by the bridge member on opposing sides of the elongate support member.

3. The suspension system of claim 1 wherein at least one of the elongate alignment

member and the first alignment receiving slot has a locking member adapted to engage the other

of the elongate alignment member and the first alignment receiving slot.

4. The suspension system of claim 3 where the locking member is resilient and

comprises a hook shaped member on an end portion of the elongate alignment member and the

first alignment receiving slot has a depending finger adapted to have its tip engage the hook

shaped member.

5. The suspension system of claim 1 wherein each of the joiner supports has at least

one socket and an electrical power plug connector seated in the socket, the electrical power plug

connector having a plug end facing outwardly of the linear fixture for connection with a

corresponding plug connector in an adjacent joiner support, said plug connector and

corresponding plug connector mating during vertical movement of the clamping member.

6. The suspension system of claim 3 wherein the elongate alignment member has a

width less than that of the first alignment receiving slot permitting lateral displacement of the

fixture relative to the hanger member.

7. A suspension system for suspending adjacent end portions of first and second

linear fixtures extending generally along a longitudinal axis from an overhead structure,

comprising:

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joiner supports mounted to each of the adjacent end portions of the first and second linear

fixtures, the joiner support having adjacent first alignment receiving slots extending inwardly

from the end portions and parallel to the longitudinal axis, and at least one pair of adjacent

inclined clamping walls accessible from a respective end portion sloping upwardly of the

longitudinal axis and inwardly of the respective end portion;

a hanger member suspended by a wire from the overhead structure for supporting the first

and second linear fixtures from the overhead structure, the hanger member comprising:

a bridge member adapted to extend transversely of the longitudinal axis of the linear

fixtures and having an opening therethrough,

a washer supported on an undersurface of the bridge member, said washer being

connected to said wire passing through the opening;

an elongated alignment member supported by the bridge member and extending

transversely of the bridge member to present a pair of opposing tongue insert portions, each of

the tongue insert portions extending along a corresponding one of the adjacent alignment

receiving slots of the joiner supports in loose locking engagement therewith to loosely

juxtaposition the end portions of the first and second linear fixtures relative to each other with

limited longitudinal and lateral movement relative to the hanger member;

at least one generally V-shaped wing member having two spaced apart wings and a

central interconnecting member, each of the wings generally extending parallel to one of the

tongue insert portions and adapted to be loosely inserted adjacent a corresponding one of the pair

of adjacent clamp walls when the tongue insert portions are inserted into the alignment receiving

slots; and,

a vertically adjustment screw passing through the bridge member and the central

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interconnecting member of the V-shaped wing member to adjustably support the wing member

from the bridge member; and the adjustment screw being adjusted to vertically raise the central

portions and wings such that the wings clamp against the clamp walls and move the end portions

of the linear fixtures towards each other to lock the joiner supports to the hanger member.

8. The suspension system of claim 7 wherein the elongate alignment member has an

opening therein through which the wire passes and the elongate alignment member is positioned

to bisect the bridge member, and further two comprising two generally V-shaped wing members

supported by the bridge member on opposing sides of the elongate support member.

9. The suspension system of claim 7 wherein the bridge member has two ribs

extending outwardly thereof to engage sides of the central interconnecting member of the wing

member to prevent the wing member from rotating with the vertical adjustment screw during

adjustment of the screw.

10. The suspension system of claim 7 wherein at least one of the elongate alignment

member and the first alignment receiving slot has a locking member adapted to engage the other

of the elongate alignment member and the first alignment receiving slot.

11. The suspension system of claim 8 where the locking member is resilient and

comprises a hook shaped member on an end portion of the elongate alignment member and the

first alignment receiving slot has a depending finger adapted to have its tip engage the hook

shaped member.

12. The suspension system of claim 7 wherein each of the joiner supports has at least

one socket and an electrical power plug connector seated in the socket, the electrical power plug

connector having a plug end facing outwardly of the linear fixture for connection with a

corresponding plug connector in an adjacent joiner support, said plug connector and

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corresponding plug connector mating during vertical movement of the clamping member.

13. The suspension system of claim 7 wherein the elongate alignment member has a

width less than that of the first alignment receiving slot permitting lateral displacement of the

fixture relative to the hanger member.

14. A suspension system for suspending a first end portion of a linear fixture having a

longitudinal axis from an overhead structure, comprising:

a joiner support mounted to the first end portion, the joiner support having a first

alignment receiving slot extending inwardly from the first end portion, and at least one first

clamping surface accessible from the first end portion;

an end cap for capping the first end portion of the linear fixture, the end cap having an

open end portion having a second alignment receiving slot extending inwardly of the open end

portion, and adjacent the first alignment receiving slot, and at least one second clamping surface

accessible from the open end portion adjacent the first clamping surface;

a hanger member suspended by a wire from the overhead structure for supporting the

linear fixture and the end cap from the overhead structure, the hanger member comprising:

a bridge member connected to said wire;

an elongated alignment member supported by the bridge member and having a pair of

opposing tongue insert portions, each of the tongue insert portions extending along a

corresponding one of the first and second alignment receiving slots of the joiner support and end

cap to loosely juxtaposition the first end portion of the linear fixture with the open end portion of

the end cap and the hanger member; and,

at least one clamping member supported from the bridge member for relative vertical

movement therewith, and the clamping member having two spaced apart wings each adapted to

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be inserted loosely adjacent a corresponding one of the first and second clamping surfaces when

the tongue insert portions are inserted into the alignment first and second receiving slots and the

clamping member being moved vertically to bring the wing members into clamping engagement

with the first and second clamping surfaces and move the first end portion of the linear fixture

and the open end portion of the end cap into locking engagement with the hanger member.

The suspension system of claim 14 wherein the elongate alignment member 15.

extends transversely across the bridge member and has an opening therein through which the

wire passes, and the elongate alignment member is positioned to bisect the bridge member, and

the joiner support further comprising two first clamping surfaces, the end cap having two second

clamping surfaces, and two clamping members supported by the bridge member on opposing

sides of the elongate support member.

16. The suspension system of claim 14 wherein at least one of the elongate alignment

member, and the first and second alignment receiving slots, has a locking member adapted to

engage the other of the elongate alignment member, and the first and second alignment receiving

slots.

17. The suspension system of claim 16 wherein the locking member is resilient and

comprises a hook shaped member on an end portion of the elongate alignment member and the

first and second alignment receiving slots each has a depending finger adapted to have its tip

engage the hook shaped member.

18. The suspension system of claim 14 wherein each of the joiner support and end cap

each has at least one socket and an electrical power plug connector seated in the socket, the

electrical power plug connector of the linear fixture having a plug end facing outwardly of the

linear fixture for mating connection with a corresponding plug connector in the end cap during

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vertical movement of the clamping member.

19. The suspension system of claim 14 wherein the elongate alignment member has a

width less than that of the first alignment receiving slot permitting lateral displacement of the

fixture relative to the hanger member.

20. A suspension system for suspending a first end portion of a linear fixture having a

longitudinal axis from an overhead structure, comprising:

a joiner support mounted to the first end portion, the joiner support having a first

alignment receiving slot extending inwardly from the first end portion and parallel to the

longitudinal axis, and at least one inclined ramp clamping wall accessible from the first end

portion sloping upwardly of the longitudinal axis and inwardly of the first end portion;

an end cap for capping the first end portion of the linear fixture, the end cap having open

end portion and a cap joiner support mounted thereto, the cap joiner support having a second

alignment receiving slot extending inwardly of the open end portion, parallel to the longitudinal

axis and adjacent the first alignment receiving slot, and at least one second inclined ramp

clamping wall accessible from the open end portion adjacent the first clamping surface sloping

upwardly of the longitudinal axis and inwardly of the open end portion;

a hanger member suspended by a wire from the overhead structure for supporting the

linear fixture and the end cap from the overhead structure, the hanger member comprising:

a bridge member adapted to extend transversely of the longitudinal axis of the linear

fixture and having an opening therethrough,

a washer supported on an undersurface of the bridge member, said washer being

connected to said wire passing through the opening;

an elongated alignment member supported by the bridge member and extending

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transversely of the bridge member to present a pair of opposing tongue insert portions, each of

the tongue insert portions extending along a corresponding one of the first and second alignment

receiving slots of the joiner supports in loose locking engagement therewith to loosely

juxtaposition the first end portion of the linear relative to the open end portion of the end cap

with limited longitudinal and lateral movement relative to the hanger member;

at least one generally V-shaped wing member having two spaced apart wings and a

central interconnecting member, each of the wings extending parallel to one of the tongue insert

portions and adapted to be inserted loosely adjacent a corresponding one of the first and second

ramp clamp walls when the tongue insert portions are inserted into the first and second alignment

receiving slots; and,

a vertically adjustment screw passing through the bridge member and the central

interconnecting member of the V-shaped wing member to adjustably support the wing member

from the bridge member; and the adjustment screw being adjusted to vertically raise the central

portions and wings such that the wings clamp against the first and second ramp clamping walls

and move the first end portion of the linear fixture and closed end portion of end cap towards

each other locking the end cap and linear fixture to the hanger member.

21. The suspension system of claim 20 wherein the elongate alignment member has

an opening therein through which the wire passes and the elongate alignment member is

positioned to bisect the bridge member, and further comprising two first and two second clamp

walls, and two generally V-shaped wing members supported by the bridge member on opposing

sides of the elongate support member.

22. The suspension system of claim 21 wherein the bridge member has two ribs

extending outwardly thereof to engage sides of the central interconnecting member of the wing

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member to prevent the wing member from rotating with the vertical adjustment screw during

adjustment of the screw.

23. The suspension system of claim 20 wherein at least one of the elongate alignment

member, and the first and second alignment receiving slots, has a locking member adapted to

engage the other of the elongate alignment member and the first and second alignment receiving

slots.

24. The suspension system of claim 23 where the locking member is resilient and

comprises a hook shaped member on an end portion of the elongate alignment member and the

first and second alignment receiving slot has a depending finger adapted to have its tip engage

the hook shaped member.

25. The suspension system of claim 20 wherein the cap joiner support has a pair of

arms with hooks that snap fit into corresponding abutments in the end cap.

26. The suspension system of claim 20 wherein each of the joiner support and end cap

each has at least one socket and an electrical power plug connector seated in the socket, the

electrical power plug connector of the linear fixture having a plug end facing outwardly of the

linear fixture for mating connection with a corresponding plug connector in the end cap during

vertical movement of the clamping member.